DOE National Fusion Collaboratory
Shared Control Room

Argonne National Laboratory, Lawrence Berkeley National Laboratory, General Atomics, MIT Plasma Science and Fusion Center, Princeton University, Princeton Plasma Physics Laboratory, University of Utah

Presented by Ti Leggett

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FusionGRID
www.fusiongrid.org

Experimental Plasma Science
Complex Real-time Analysis

- Pulsed Experiments: 10s duration plasma every 20 min

- 20 to 40 people in control room plus remote collaborators

- 10,000 separate measurements per plasma

- Long term goal: what we do overnight we do between plasmas

Alcator C–Mod Control Room

DIII–D Control Room

Fusion Experiment Timeline

- ~1 year - research opportunities forum
- ~1-3 months - mini proposal
- ~1 week - shot plan
- Day of
  - 8:05 pre-operations meeting
  - ~8:15 test shots (3)
  - ~9:00 first plasma, systems conditioning
  - ~10:00 science begins
  - Ends at 5:00

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Preparation

- Research Opportunities
  - Access Grid enabled
  - Participation from
    - United Kingdom
    - Germany
  - 1 out of 5 selected

- Mini-proposal
  - Description of science
  - 5 - 10 page formal document

- Shot plan
  - Detailed description of experiment

Role of Edge Current in Quiescent Stability
(W.P. West)

• Secure computational resources that can be scheduled as required

• Rapidly compare experimental data to simulation results

• Share individual results with the group via shared displays

• Fully engaged remote scientists with audio, video, shared displays
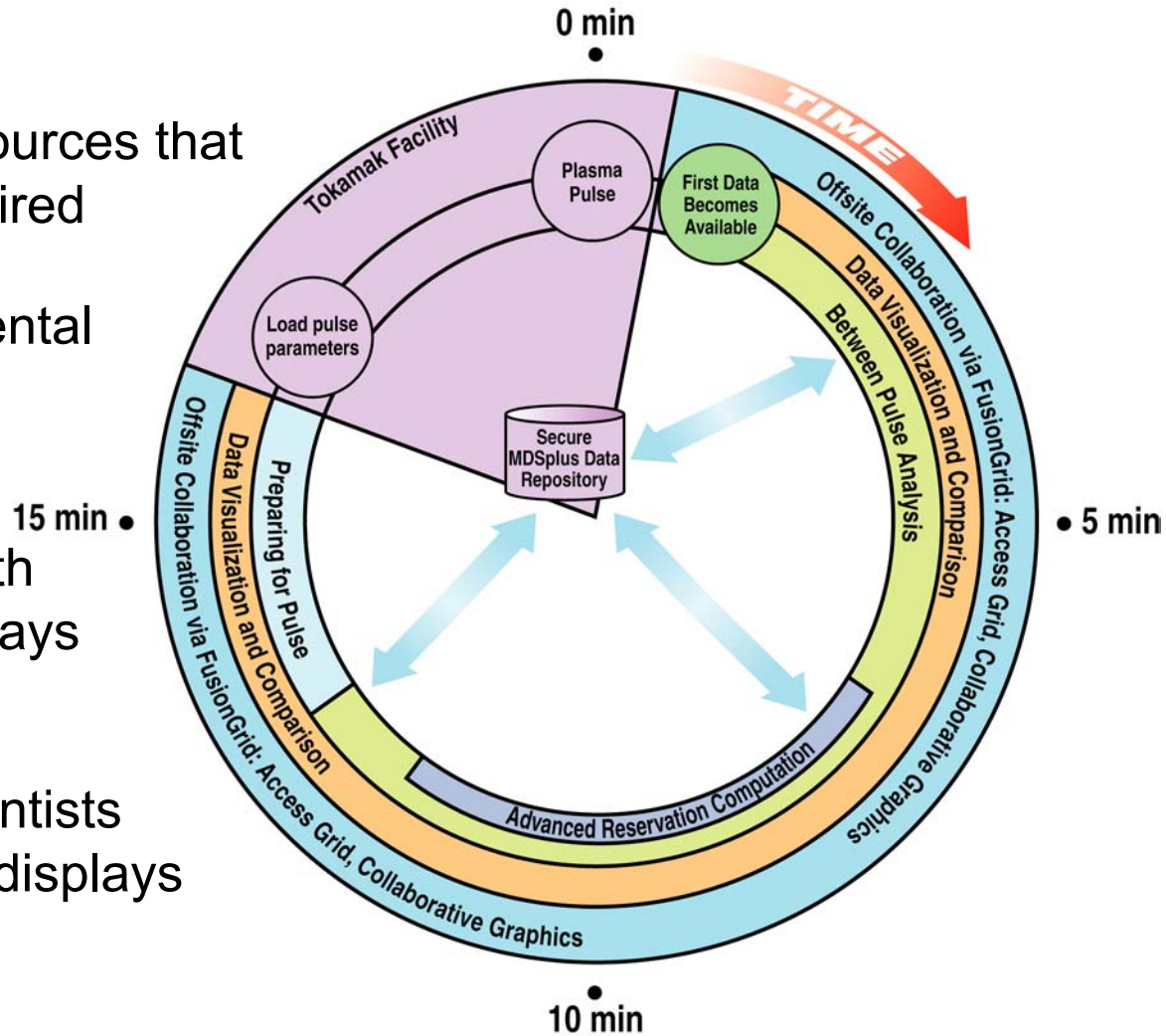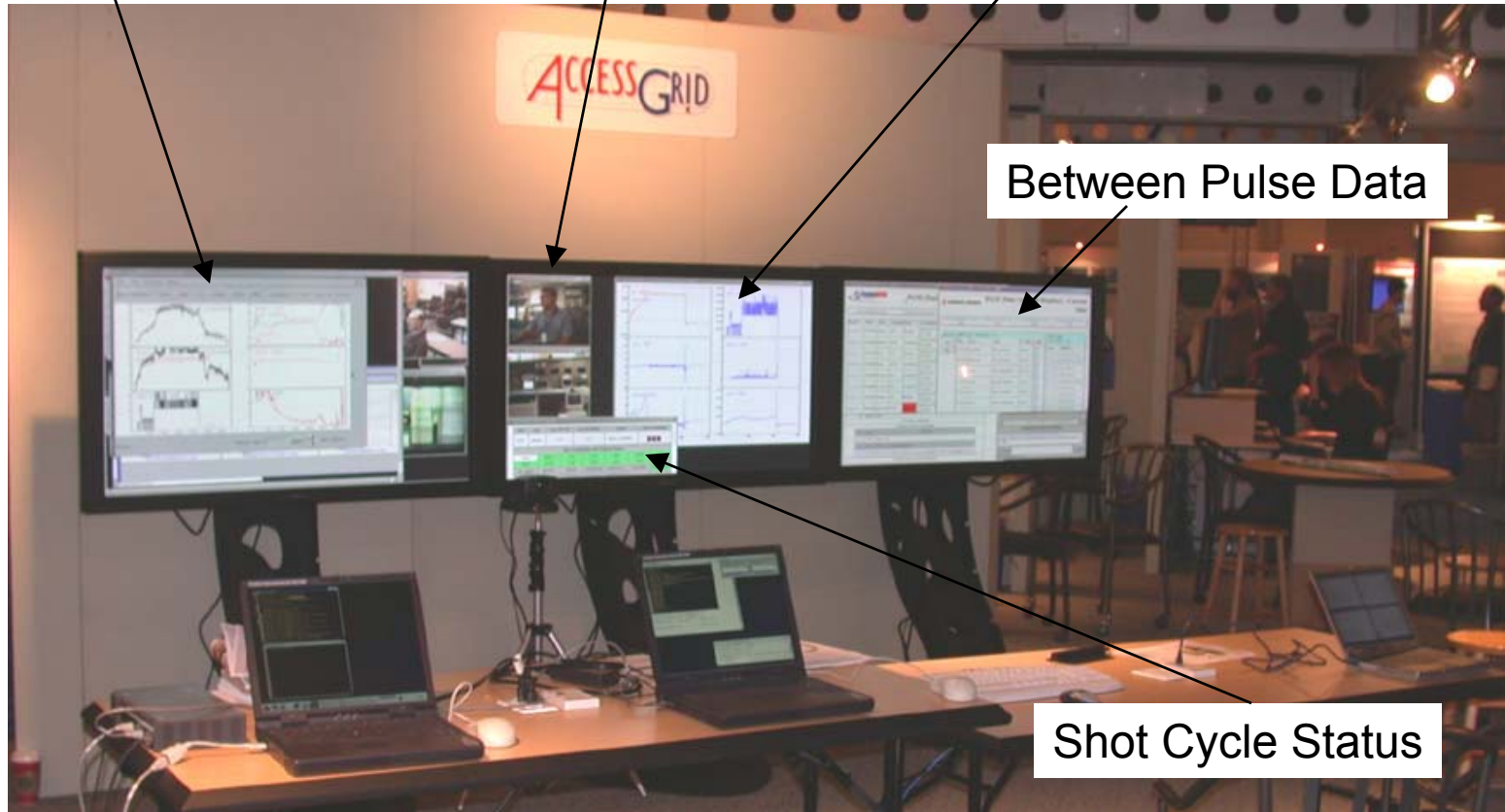
Collaborative Control Room
Creating A Sense of Presence

SuperComputing 2003, Phoenix AZ

Integrating Off–site Scientist Into The Experiment

- Showcase event represents the off–site scientist
- Fully interactive discussions utilizing AG
  - Includes shared applications
- Sense of presence required beyond AG communication
  - Things one "sees and hears" in the control room
- Enhanced collaboration within the control room
  - Tiled displays and a shared X environment
- Dedicated computation
  - Supports between pulse data analysis, monitored by Data Analysis Monitoring